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Soyuz capsule suffered partial depressurization during April landing

by Jeff Foust — October 17, 2017

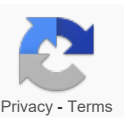


The Soyuz MS-02 capsule descends under its main parachute prior to landing in Kazakhstan in April 2017. An issue with the parachute's deployment caused a partial loss of pressurization inside the capsule. Credit: NASA/Bill Ingalls

WASHINGTON — A Soyuz spacecraft returning three people to Earth in April experienced a partial loss of pressure during the final stages of its descent, but did not put the crew's lives in danger.

The incident, revealed during an Oct. 16 meeting of NASA's International Space Station Advisory Committee, is one of a series of events that have raised questions about the reliability of Russian vehicles supporting the station.

During the committee meeting, chairman Thomas Stafford, a former astronaut, said the incident



place when the main parachute of the Soyuz spacecraft deployed about eight kilometers above the landing site in Kazakhstan. A buckle that is part of the parachute system struck the capsule.

“The buckle struck a welding seam and, as a result, there was a depressurizing event that resulted in some air escaping the capsule,” he said.

Stafford didn’t identify the specific mission where this took place, other than to say that it happened in April of this year. The only Soyuz spacecraft to return to Earth that month was Soyuz MS-02, which landed April 10. It carried NASA astronaut Shane Kimbrough and Roscosmos cosmonauts Sergey Ryzhikov and Andrey Borisenko, who spent nearly six months on the ISS.

NASA spokesman Gary Jordan confirmed Oct. 17 that the incident took place during the Soyuz MS-02 landing. He referred additional questions about it to the Russian state space corporation Roscosmos, which has not publicly discussed it to date.

The partial loss of pressure did not put the crew in jeopardy, Stafford said. A valve normally opens once the capsule descends to an altitude of five kilometers to allow outside air into the capsule. The crewmembers were also wearing pressure suits, as is standard procedure on Soyuz landings.

“Since the crew was suited, the depressurization presented no issue for the crew,” Stafford said, adding that they knew about the issue from sensors in the spacecraft.

At a June meeting of Stafford’s committee with its Russian equivalent, Stafford said that Russian officials believed that the way the parachute was folded inside the Soyuz may have caused the buckle to hit the capsule during deployment, with the angle of the spacecraft during reentry also possibly playing a role.

Stafford said there was no record of a similar event taking place in previous Soyuz landings. “Work has been done to review the anomaly, and mitigation steps were implemented to ensure it will not happen in the future,” he said.

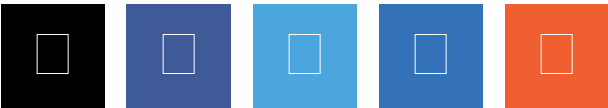
The incident, while minor, is one of several in recent years involving Russian vehicles supporting the ISS. Last December, **a Progress cargo spacecraft was lost** when the upper stage of its Soyuz rocket failed. **Another Progress was stranded in low Earth orbit**, spinning uncontrollably, after an April 2015 launch. It reentered days later without attempting to dock to the ISS.

Stafford said that the investigation of the December 2016 launch failure was hampered by a telemetry system that was not able to capture the high-speed anomaly, lasting only milliseconds, leading up to the failure. Roscosmos has since upgraded that telemetry system to be able to better capture rapid events, he said, while also reviewing and updating overall quality controls for launch vehicle and

spacecraft manufacturing.

On Oct. 12, the launch of another Progress spacecraft on a Soyuz rocket was aborted in the final minute of the countdown, a rarity in the history of Soyuz missions to the ISS. That scrub, NASA later said, was due to an electrical connection on one of the launch pad service towers failing to disconnect from the rocket as planned, keeping the rocket from switching to internal power.

The Soyuz successfully launched the Progress two days later, and the cargo spacecraft docked with the ISS on Oct. 16.



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